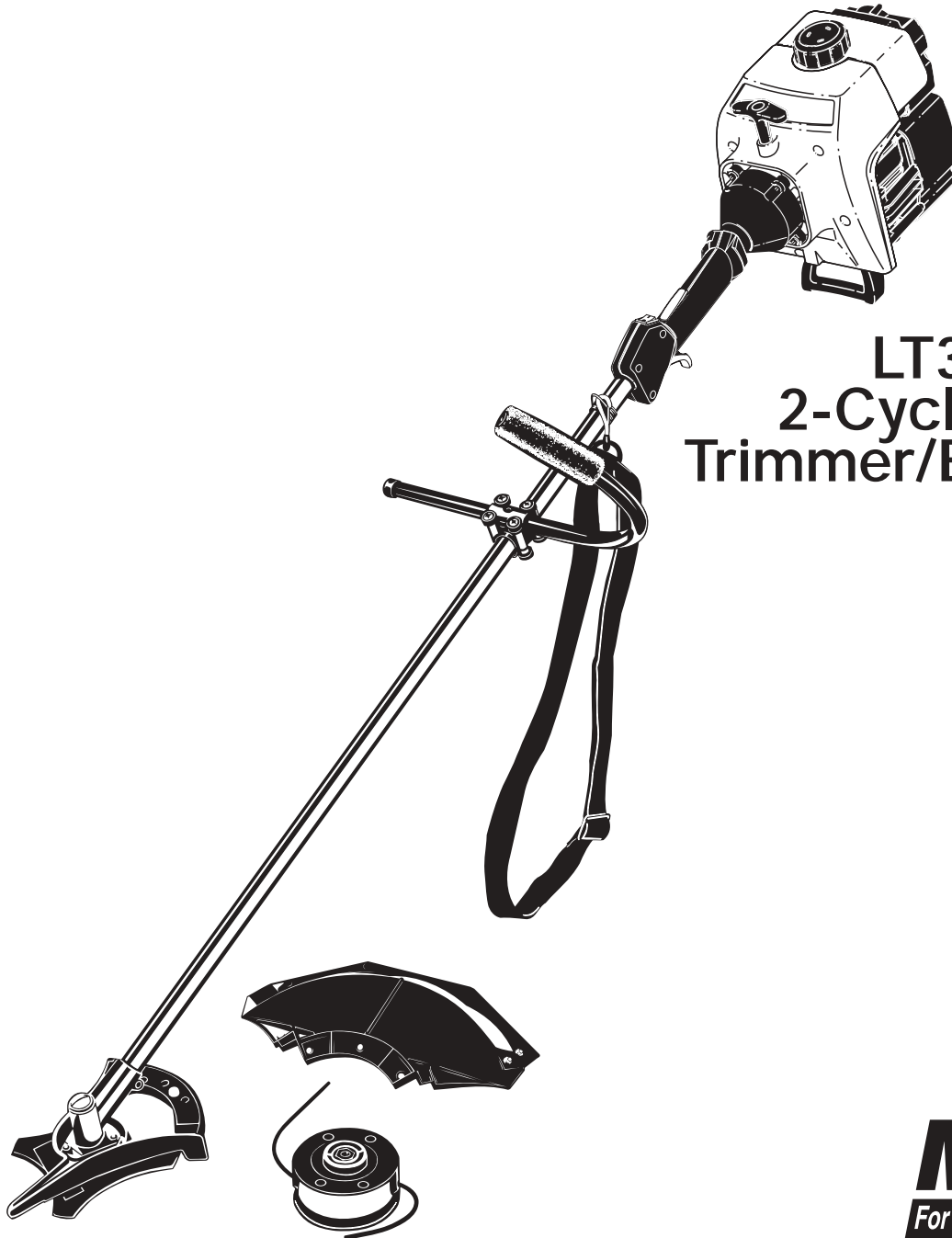




# Operator's Manual



**LT31CS  
2-Cycle Petrol  
Trimmer/Brushcutter**



**IMPORTANT:** Read safety rules and instructions carefully before operating equipment.

**MTD SOUTHWEST 550 N. 54TH STREET, CHANDLER, ARIZONA 85226-2434**

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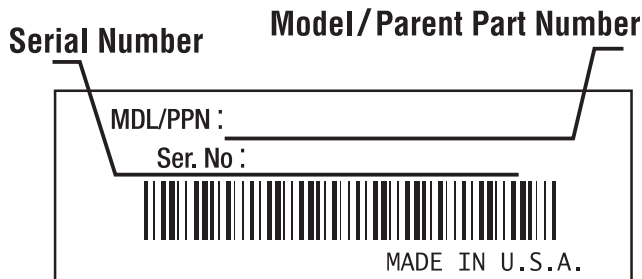
## FINDING MODEL NUMBER

This Operator's Manual is an important part of your new trimmer. It will help you assemble, prepare and maintain the unit for best performance. Please read and understand what it says.



**Before you start assembling your new equipment**, please locate the model plate on the unit and copy the information from it to the space provided below. The information on the model plate is very important if you need help from our Customer Support Department or an authorized dealer.

- Locate the model number by standing in the operating position behind the unit and looking on the left side of the engine next to the On/Off Stop Control Switch. A sample model plate is explained below. For future reference, please copy the model number and the serial number of the equipment in the space below.



Copy the model number here: \_\_\_\_\_

Copy the serial number here: \_\_\_\_\_

Copy the parent part number here: \_\_\_\_\_

# SECTION 1: IMPORTANT SAFE OPERATION PRACTICES



This Symbol Points Out Important Safety Information Which, If Not Followed, Could Endanger The Personal Safety And/or Property Of Yourself And Others. Read And Follow All Instructions In This Manual Before Attempting To Operate Your Cultivator. Failure To Comply With These Instructions May Result In Personal Injury. When You See This Symbol—Heed Its Warning.



**SAFETY ALERT SYMBOL:** Indicates danger, warning, or caution. Attention is required in order to avoid serious personal injury. May be used in conjunction with other symbols or pictographs.

**NOTE:** *Advises you of information or instructions vital to the operation or maintenance of the equipment.*



**DANGER:** Failure to obey a safety warning will result in serious injury to yourself or to others. Always follow the safety precautions to reduce the risk of fire, electric shock, and personal injury.



**WARNING:** Failure to obey a safety warning can result in injury to yourself and others. Always follow the safety precautions to reduce the risk of fire, electric shock, and personal injury.



**CAUTION:** Failure to obey a safety warning may result in property damage or personal injury to yourself or to others. Always follow the safety precautions to reduce the risk of fire, electric shock, and personal injury.

## READ ALL INSTRUCTIONS BEFORE OPERATING

- Read the instructions carefully. Be familiar with the controls and proper use of the unit.
- Do not operate this unit when tired, ill, or under the influence of alcohol, drugs, or medication.
- Children and teens under the age of 15 must not use the unit, except for teens guided by an adult.
- Inspect the unit before use. Replace damaged parts. Check for fuel leaks. Make sure all fasteners are in place and secure. Replace cutting head parts that are cracked, chipped, or damaged in any way. Make sure the cutting head is properly installed and securely fastened. Be sure the cutting head guard is properly attached, and positioned as recommended. Failure to do so can result in personal injury to the operator and bystanders, as well as damage to the unit.
- Use only 2.41 mm (0.095 inch) diameter original equipment replacement line. Never use metal-reinforced line, wire, or rope, etc. These can break off and become a dangerous projectile.
- Be aware of risk of injury to head, hands, and feet.
- Clear the area to be cut before each use. Remove all objects such as rocks, broken glass, nails, wire, or string which can be thrown or become entangled in the cutting head.
- Clear the area of children, bystanders, and pets. At a minimum, keep all children, bystanders and pets outside a 15 meters (50 ft.) radius; there still may be a risk to bystanders from thrown objects.
- Bystanders should be encouraged to wear eye protection. If you are approached, stop the engine and cutting head immediately.

- Squeeze the throttle control and check that it returns automatically to the idle position. Make all adjustments or repairs before using unit.

## SAFETY WARNINGS FOR PETROL TRIMMERS



**WARNING:** Petrol (gasoline) is highly flammable, and its vapors can explode if ignited. Take the following precautions:

- Store fuel only in containers specifically designed and approved for the storage of such materials.
- Always stop the engine and allow it to cool before filling the fuel tank. Never remove the cap of the fuel tank, or add fuel, when the engine is hot. Never operate the unit without the fuel cap securely in place. Loosen the fuel tank cap slowly to relieve any pressure in the tank.
- Add fuel in a clean, well-ventilated area outdoors where there are no sparks or flames. Slowly remove the fuel cap only after stopping engine. Do not smoke while fueling or mixing fuel. Wipe up any spilled fuel from the unit immediately.
- Avoid creating a source of ignition for spilled fuel. Do not start the engine until fuel vapors dissipate.
- Move the unit at least 9.1 m (30 feet) from the fueling source and site before starting the engine. Do not smoke, keep sparks and open flames from the area while adding fuel or operating the unit.

## WHILE OPERATING

- Never start or run the unit inside a closed room or building. Breathing exhaust fumes can kill. Operate this unit only in a well-ventilated area outdoors.
- Wear safety glasses or goggles and ear/hearing protection when operating this unit. Wear a face or dust mask if the operation is dusty. Long sleeve shirts are recommended.

- Wear heavy, long pants, boots and gloves. Do not wear loose clothing, jewelry, short pants, sandals or go barefoot. Secure hair above shoulder level.
- The cutting guard must always be in place while operating the unit as a trimmer. Do not operate unit without both trimming lines extended, and the proper line installed. Do not extend the trimming line beyond the length of the guard.
- This unit has a clutch. The cutting head remains stationary when the engine is idling. If it does not, have the unit adjusted by an authorized service technician.
- Adjust the J-Handle to your size to provide the best grip.
- Be sure the cutting head is not in contact with anything before starting the unit.
- Before each use, check that the cutting head is in good condition and correctly installed, that the trigger returns automatically to the idle position.
- Use the unit only in daylight or good artificial light.
- Avoid accidental starting. Be in the starting position whenever pulling the starter rope. The operator and unit must be in a stable position while starting. See *Starting/Stopping Instructions*.
- Use the right tool. Only use the tool for the purpose intended.
- Do not overreach. Always keep proper footing and balance.
- Always hold the unit with both hands when operating. Keep a firm grip on both the front and rear handles or grips.
- Always use the shoulder harness when using this unit.
- Keep hands, face, and feet at a distance from all moving parts. Do not touch or try to stop the cutting head when it is rotating.
- Do not touch the engine or muffler. These parts get extremely hot from operation. When turned off they remain hot for a short time.
- Do not operate the engine faster than the speed needed to cut, trim or edge. Do not run the engine at high speed when not cutting.
- Always stop the engine when cutting is delayed or when walking from one cutting location to another.
- If you strike or become entangled with a foreign object, stop the engine immediately and check for damage. Do not operate before repairing damage. Do not operate the unit with loose or damaged parts.
- Stop and switch the engine off for maintenance, repair or for changing the cutting head and cutting blade.
- Use only original equipment replacement parts when servicing this unit. These parts are available from your authorized service dealer. Do not use parts, accessories, or attachments not authorized for this unit. Doing so could lead to serious injury to the user or damage to the unit and void your warranty.
- Keep unit clean of vegetation and other materials. They may become lodged between the cutting head and guard.
- To reduce fire hazard, replace faulty mufflers and spark arrestors, keep the engine and muffler free of grass, leaves, excessive grease, or carbon build-up.
- Always use the shoulder harness when using the brush blade accessory.
- Keep the handle between the operator and cutting head or cutting blade at all times.
- NEVER cut with the cutting blade located over 76 cm (30 in.) or more above the ground level.
- **Kick back** may occur when the spinning brush blade contacts an object that it does not immediately cut. **Kick back** can be violent enough to cause the unit and/or operator to be propelled in any direction, and possibly lose control of the unit. **Kick back** can occur without warning if the blade snags, stalls or binds. This is more likely to occur in areas where it is difficult to see the material being cut.
- For operation with the cutting blade, do not cut anything thicker than 12.7mm (1/2-in.) or a violent **kick back** could occur.
- Do not attempt to touch or stop the cutting blade when it is rotating.
- A coasting cutting blade can cause injury while it continues to spin after the engine is stopped or the throttle trigger is released. Maintain proper control until the blade has completely stopped rotating.
- Do not run unit at high speed when not cutting.
- If you strike or become entangled with a foreign object, stop the engine immediately and check for damage. Have any damage repaired before attempting further operations. Do not operate with a bent, cracked, or dull cutting blade. Discard blades that are bent, warped, cracked, or broken.
- Do not sharpen the cutting blade. Sharpening the blade can cause the blade tip to break off while in use. This can result in severe personal injury. Replace the cutting blade.
- Stop the engine IMMEDIATELY if you feel excessive vibration. Vibration is a sign of trouble. Inspect thoroughly for loose nuts, bolts, or damage before continuing. Repair or replace affected parts as necessary.

#### AFTER USE

- Clean cutting blades with a household cleaner to remove any gum build-up. Oil the blade with machine oil to prevent rust.
- Lock up and store the cutting blade in an appropriate area to protect the blade from unauthorized use or damage.

#### OTHER SAFETY WARNINGS

- Never store the unit with fuel in the tank inside a building where fumes may reach an open flame or spark.
- Allow the engine to cool before storing or transporting. Be sure to secure the unit while transporting. Drain fuel before transporting unit.
- Store the unit in a locked up and dry, or high and dry place to prevent unauthorized use or damage. Keep out of the reach of children.
- Never douse or squirt the unit with water or any other liquid. Keep handles dry, clean, and free from debris. Clean after each use, see *Cleaning and Storage Instructions*.
- Keep these instructions. Refer to them often and use them to instruct other users. If you loan someone this unit, also loan them these instructions.

### SAVE THESE INSTRUCTIONS

#### WHILE OPERATING WITH CUTTING BLADE

- Read and understand all safety warnings before operating this unit.

## SAFETY AND INTERNATIONAL SYMBOLS

This operator's manual describes safety and international symbols and pictographs that may appear on this product. Read the operator's manual for complete safety, assembly, operating and maintenance and repair information.

### SYMBOL

### MEANING



- **SAFETY ALERT SYMBOL**  
Indicates danger, warning, or caution. May be used in conjunction with other symbols or pictographs.



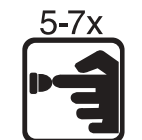
- **WARNING - READ OPERATOR'S MANUAL**  
Read the Operator's Manual(s) and follow all warnings and safety instructions. Failure to do so can result in serious injury to the operator and/or bystanders.



- **WEAR EYE AND HEARING PROTECTION**  
**WARNING:** Thrown objects and loud noise can cause severe eye injury and hearing loss. Wear eye protection meeting ANSI Z87.1-1989 standards and ear protection when operating this unit. Use a full face shield when needed.



- **KEEP BYSTANDERS AWAY**  
**WARNING:** Keep all bystanders, especially children and pets, at least 50 feet (15 m) from the operating area.



- **PRIMER**  
Push primer bulb, fully and slowly, 5 to 7 times.



- **UNLEADED FUEL**  
Always use clean, fresh unleaded fuel.



- **OIL**  
Refer to operator's manual for the proper type of oil.



- **THROWN OBJECTS CAN CAUSE SEVERE INJURY**  
**WARNING:** Keep clear of blower outlet. Never point the blower at yourself or others. Objects can be thrown from blower. Do not operate unit without proper attachments and guards in place.

### SYMBOL

### MEANING



- **WEAR HEAD PROTECTION**  
**WARNING:** Falling objects can cause severe head injury. Wear head protection when operating this unit.



- **ON/OFF STOP CONTROL**  
ON / START / RUN



- **ON/OFF STOP CONTROL**  
OFF or STOP



- **HOT SURFACE WARNING**  
Do not touch a hot muffler or cylinder. You may get burned. These parts get extremely hot from operation. They remain hot for a short time even after the unit is turned off.



- **SHARP BLADE**  
**WARNING:** Sharp blade on cutting head guard. To prevent serious injury, do not touch line cutting blade.



- **BRUSHCUTTERS Replace dull blade**  
Do not sharpen the cutting blade. Sharpening the blade can cause the blade tip to break off while in use. This can result in severe personal injury.



- **CHOKE CONTROL**  
A. FULL choke position.  
B. PARTIAL choke position.  
C. RUN position.



- **TRIMMER/BRUSHCUTTER SAFETY**  
**WARNING:** Thrown objects and rotating cutter can cause severe injury. Keep bystanders, especially children and pets, at least 15 meters (50 ft.) away from the cutting area. The cutting head guard must be used when using the trimmer cutting head.

## SECTION 2: KNOW YOUR TRIMMER

### KNOW YOUR UNIT

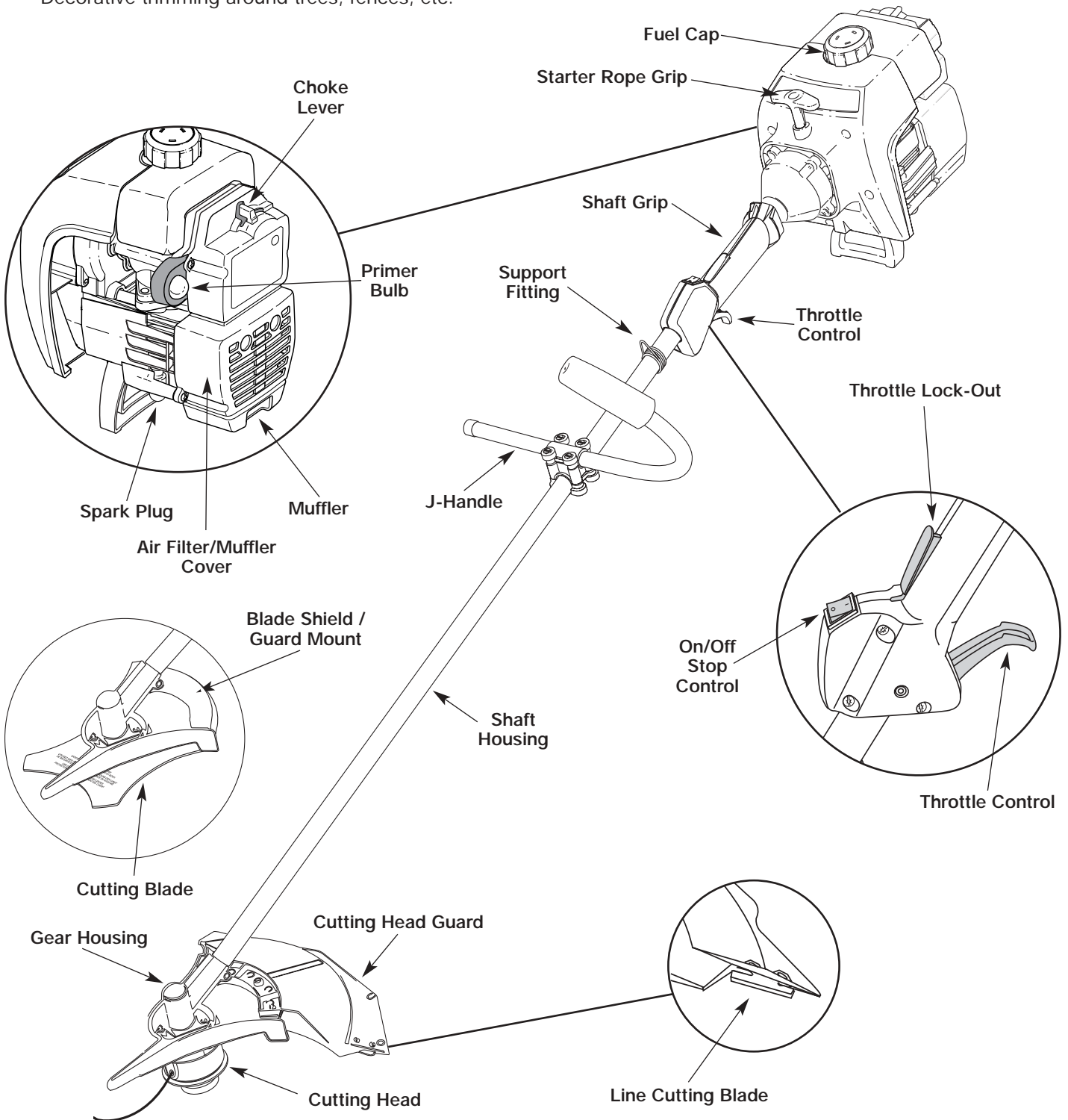
#### APPLICATIONS

As a trimmer:

- Cutting grass and light weeds
- Edging
- Decorative trimming around trees, fences, etc.

As a brushcutter:

- Cutting weeds and light brush of up to 12.7mm (1/2-in.) in diameter



## SECTION 3: ASSEMBLING YOUR TRIMMER

On some units, the J-handle may be pre-installed, requiring only screw loosening and J-handle adjustment tailored to the operator. Go to step 6 to adjust the J-handle if it is pre-installed.

### INSTALLING AND ADJUSTING THE J-HANDLE

#### Installing

1. Remove the screws, nuts, and top and middle clamp pieces that were installed on the J-handle for shipping.
2. Place the J-handle between the top and middle clamp pieces, Figure 1.

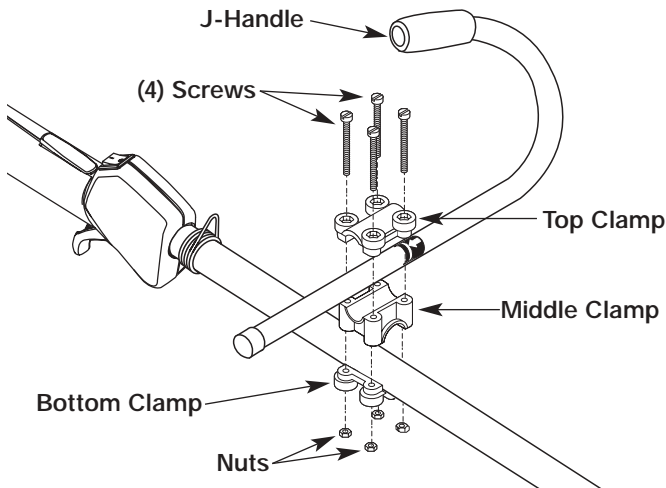


FIGURE 1

3. While holding the three pieces together, install the four (4) screws through the top clamp and into middle clamp.

**NOTE:** *The holes in the top and middle clamp will line up only when assembled correctly.*

4. Place the clamps and the J-handle over the shaft housing and onto the bottom clamp.
5. Hold each hex nut in the bottom clamp recess with a finger. Start screws with a large Phillips screwdriver. Do not tighten until you make the handle adjustment.

#### Adjusting

6. Loosen the screws so that the J-handle can be easily moved in the clamp assembly. Do not remove the screws or nuts.
7. Slide the J-handle in or out until the arrow/white line on the decal touches the clamp assembly, Figure 2.

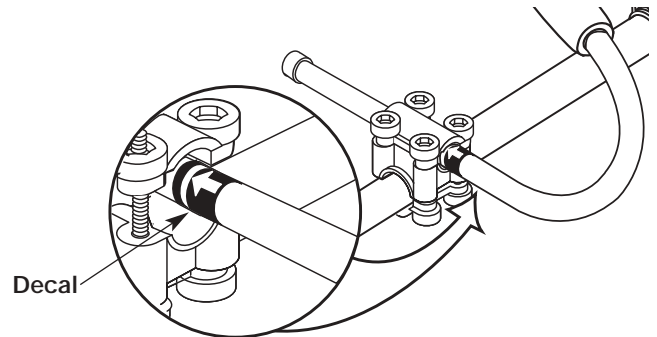


FIGURE 2

8. While holding the unit in the operating position, position the J-handle to the location that provides you the best grip, Figure 3.
9. Tighten the clamp screws evenly, until the J-handle is secure.



FIGURE 3

## INSTALLING THE HARNESS



**WARNING:** Always use the shoulder harness when using the cutting blade to avoid serious personal injury.

1. Push the strap through the centre of the buckle.
2. Pull the strap over the cross bar and down through the slot in the buckle, Figure 4.
3. Put the harness on overhead and onto shoulder. Snap it on to the support fitting, Figure 5.
4. Adjust length to fit the operator's size. Pull tab to lengthen, pull strap to shorten, Figure 6.

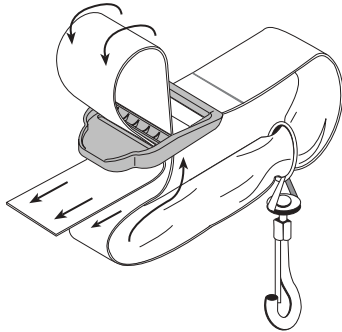


FIGURE 4

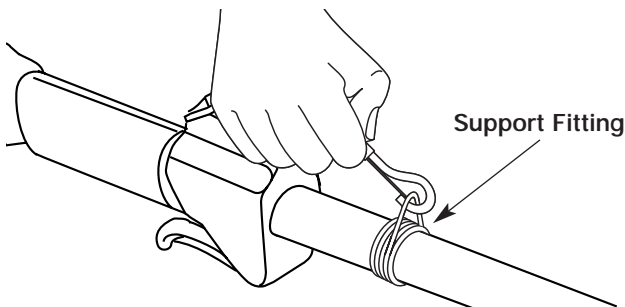


FIGURE 5

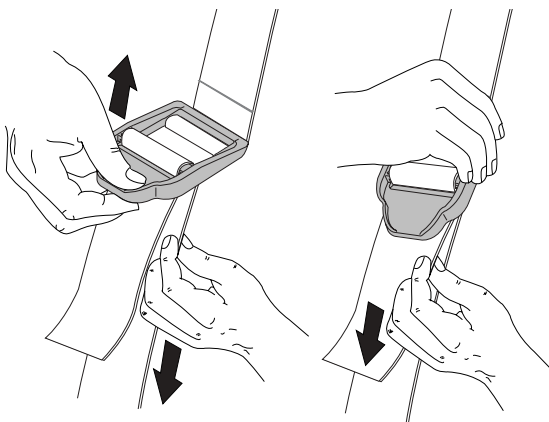


FIGURE 6

## REMOVING AND INSTALLING CUTTING HEAD GUARD

**NOTE:** Remove the cutting head guard when using the unit as a brushcutter.



**WARNING:** The cutting head guard should NOT be installed when operating the unit with a blade. Remove the cutting head guard before removing or installing the blade.

Remove the cutting head guard from the guard mount by removing the three (3) screws with a flat blade screwdriver, Figure 7. Store parts for future use.

**NOTE:** Install the cutting head guard when using the unit as a grass trimmer.

**WARNING:** To avoid serious personal injury, the cutting head guard SHALL be in place at all times while operating the unit as a grass trimmer.

Install the cutting head guard on the guard mount by inserting the three (3) screws into the guard mount. Tighten securely with a flat blade screwdriver, Figure 7.

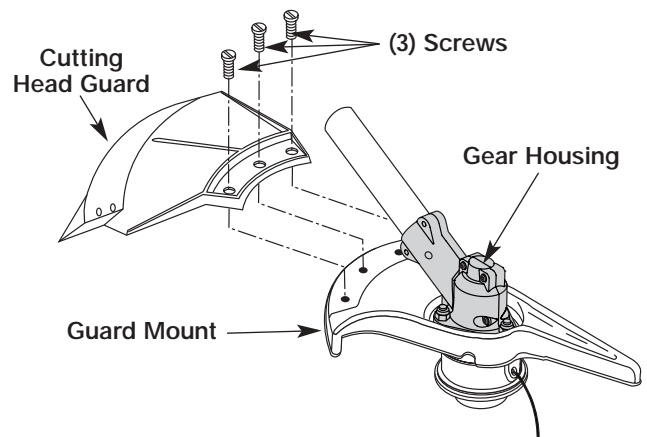


FIGURE 7

## REMOVING THE CUTTING HEAD AND INSTALLING THE CUTTING BLADE

**NOTE:** To make removing or installing the cutting blade or cutting head easier, place the unit on the ground or on a work bench.

### Remove the Cutting Head Guard

See *Removing and Installing Cutting Head Guard* instructions above.



## Remove the Cutting Head



**WARNING:** The gear housing gets hot with use and can result in injury to the operator. When the unit is turned off it remains hot for a short time. Do not touch the gear housing until it has cooled.

1. Align the shaft bushing hole with the locking rod slot and insert the locking rod into the shaft bushing hole, Figure 8.

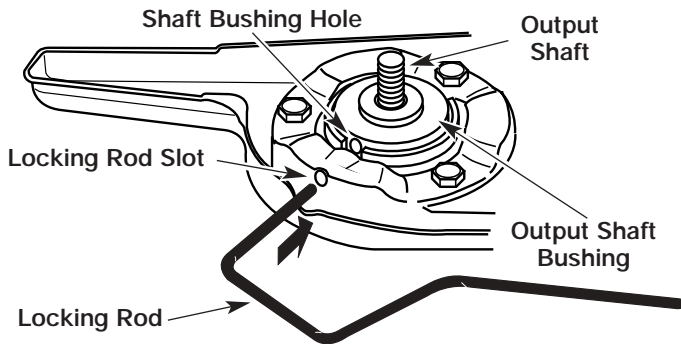


FIGURE 8

2. Hold the locking rod in place by grasping it next to the boom of the unit, Figure 9.

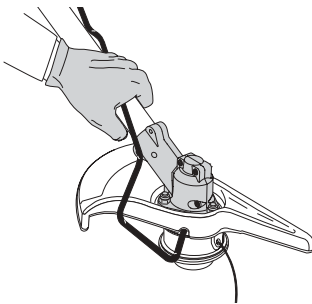


FIGURE 9

3. While holding the locking rod, remove the cutting head by turning it clockwise off of the output shaft, Figure 10. Store the cutting head for future use.

**NOTE:** The blade retainer under the cutting head will be used when installing the cutting blade.

## Install the Cutting Blade



**WARNING:** To avoid serious personal injury, always wear gloves while handling or installing the blade.

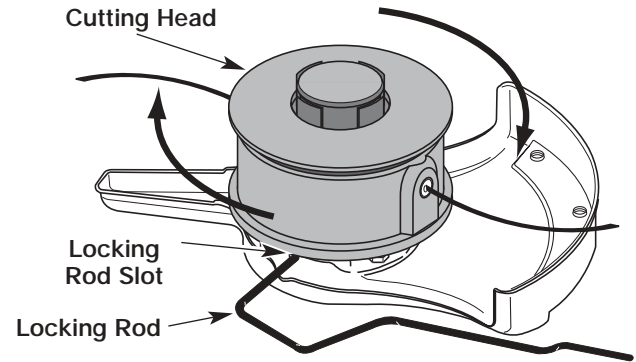


FIGURE 10

4. Place the cutting blade on the output shaft bushing, Figure 11.
5. Make sure that the cutting blade is centered on the pilot step and sitting flat against the output shaft bushing, Figure 12.



**WARNING:** If the cutting blade is off-centre, the unit will vibrate, and the blade may fly off, which can cause serious personal injury.

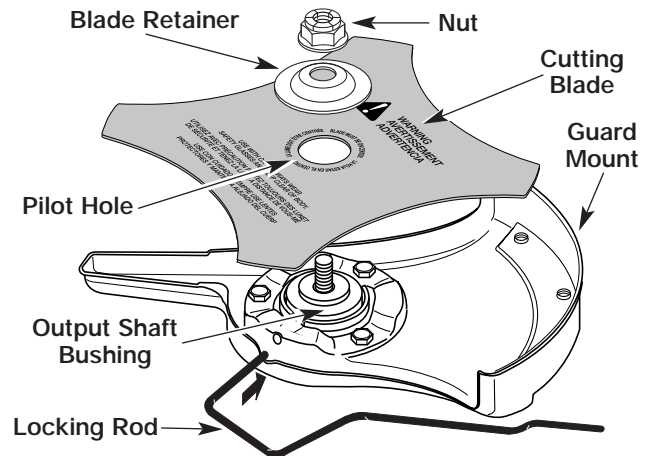


FIGURE 11

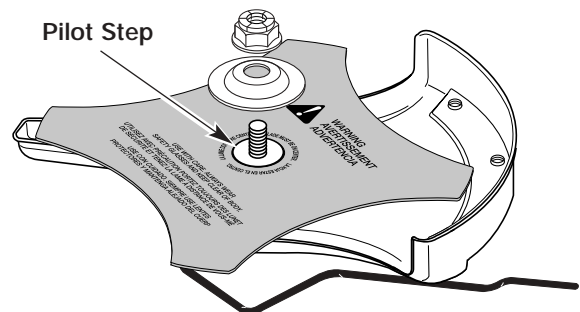


FIGURE 12

6. Align the shaft bushing hole with the locking rod slot and insert the locking rod into the bushing hole, Figure 8.
7. Put the blade retainer and nut on the output shaft. Make sure that the blade is installed correctly.
8. Tighten nut counterclockwise against the blade while holding the locking rod:
  - If using a torque wrench and an 5/8 inch socket tighten to:
 

**37 - 38 N•m; 325 - 335 in•lb; 27 - 28 ft.•lb.**
  - Without a torque wrench, use a 5/8 inch closed-end or socket wrench, turning the nut until the blade retainer is snug against the shaft bushing. Make sure that the blade is installed correctly, then rotate the nut an additional 1/4 to 1/2 turn counterclockwise, Figure 13.

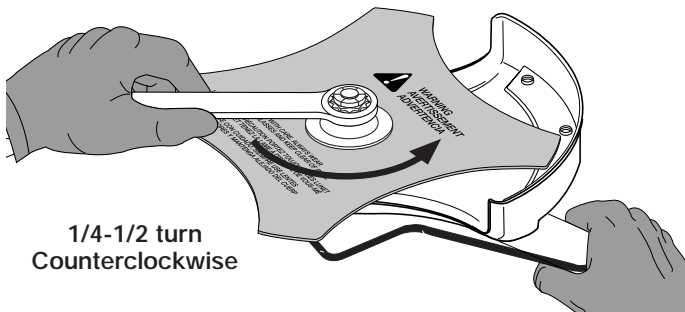


FIGURE 13

9. Remove the locking rod from the locking rod slot.



**WARNING:** To avoid serious personal injury or damage to the unit, do not start or operate this unit with the locking rod in the locking rod slot.



**WARNING:** Do not sharpen the cutting blade. Sharpening the blade can cause the blade tip to break off while in use. This can result in severe personal injury. Replace the blade.

## REMOVING THE CUTTING BLADE AND INSTALLING THE CUTTING HEAD

### Remove the Cutting Blade



**WARNING:** To avoid serious personal injury, always wear gloves while handling or installing the blade.

1. Align the shaft bushing hole with the locking rod slot and insert the locking rod into the bushing hole, Figure 8.

2. Hold the locking rod in place by grasping it next to the boom of the unit, Figure 14.
3. While holding the locking rod, loosen the nut on the blade by turning it clockwise with a 5/8 inch closed-end or socket wrench, Figure 14.

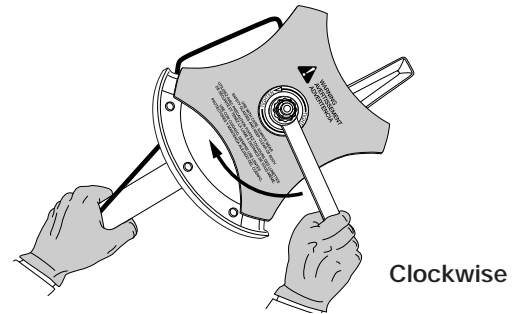


FIGURE 14

4. Remove the nut, blade retainer, and blade. Store the nut and blade together for future use in a secure place. Store out of reach of children.

### Install the Cutting Head

5. Align the shaft bushing hole with the locking rod slot and insert the locking rod into the shaft bushing hole, Figure 8. Place the blade retainer on the output shaft with the flat surface against the output shaft bushing as shown in Figure 15. Screw the cutting head counterclockwise onto the output shaft. Tighten securely.

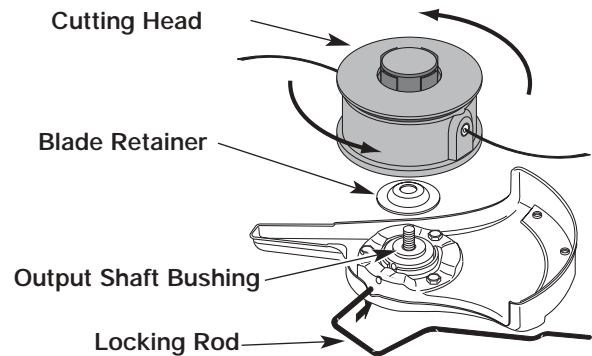


FIGURE 15

**NOTE:** The blade retainer must be installed on the output shaft in the position shown for the cutting head to work correctly.

6. Remove the locking rod.
7. Install the cutting head guard. See *Removing and Installing Cutting Head Guard* instructions.



**WARNING:** To avoid serious personal injury, the cutting head guard **MUST** be in place at all times while operating the unit as a grass trimmer.

## SECTION 4: OPERATING YOUR TRIMMER

Old and/or improperly mixed fuel are usually the main reasons for the unit not running properly. Be sure to use fresh, clean fuel and follow the instructions carefully for the proper fuel/oil mixture.

**NOTE:** *Alcohol-blended fuel absorbs moisture (water). As little as 1% moisture in the fuel can cause fuel and oil to separate and form acids when stored. If alcohol - blended fuel must be used, use fresh fuel (less than 60 days old), and mix according to the mixing instructions.*

### DEFINITION OF BLENDED FUELS

Today's fuels are often a blend of petrol (gasoline) and one or more oxygenates such as ethanol, methanol or MTBE (ether).

### USE OF BLENDED FUELS

If you choose to use a blended fuel or its use is unavoidable, the following precautions are recommended:

1. Always use the fresh fuel mix explained in your operator's manual.
2. Use the fuel additive STA-BIL® or an equivalent.
3. Always agitate the fuel mix before fueling the unit.
4. Drain the tank and run the engine dry before storing the unit.

### USE OF FUEL ADDITIVES

The use of fuel additive, such as STA-BIL® Fuel Stabilizer or an equivalent, will inhibit corrosion and minimize the formation of gum deposits. Add 23 ml. (0.8 oz.) per gallon of fuel per instructions on container. NEVER add fuel additives directly to the unit's fuel tank. Using a fuel additive can keep fuel fresh for up to six (6) months.



**CAUTION:** For proper engine operation and maximum reliability, pay strict attention to the oil and fuel mixing instructions on the 2-cycle oil container. Use a 25:1 fuel/oil ratio. Use 2-cycle oil. Using improperly mixed fuel can severely damage the engine.

### RECOMMENDED OIL TYPE

Use a high quality oil formulated for use in 2-cycle, air-cooled engines.

### RECOMMENDED FUEL TYPE

Always use clean, fresh, unleaded petrol (gasoline) that is less than 60 days old.



**WARNING:** Petrol (gasoline) is extremely flammable and its vapors can explode if they are ignited. Always stop the engine and allow it to cool before filling the fuel tank. Do not smoke while filling the tank. Keep sparks and open flames away from the area.





**WARNING:** Remove fuel cap slowly to avoid injury from fuel spray.



**DANGER:** Combustible mixture contains petroleum distillate. Store away from heat or open flame. Harmful or fatal if swallowed. If swallowed, do not induce vomiting, **call a physician immediately**. Avoid prolonged contact with skin. Wash thoroughly after handling.

### OIL AND FUEL MIXING INSTRUCTIONS

Thoroughly mix 3.8 liters of unleaded petrol (gasoline) with 120 ml. of 2 cycle engine oil in a separate fuel can, 32:1. Do not mix them directly in the engine fuel tank.

	+	
UNLEADED GAS		2 CYCLE OIL
4.8 LITERS (1.27 US. GALLON)	+	120 ml (4.0 FL. OZ.)
1 LITER + 25 ml		
MIXING RATIO - 32:1		

## STARTING INSTRUCTIONS



**WARNING:** Operate this unit only in a well ventilated outdoor area. Carbon monoxide exhaust fumes can be lethal in a confined area.



**WARNING:** Avoid accidental starting. Be in the starting position when pulling the starter rope, Figure 18. The operator and unit must be in a stable position while starting to avoid serious personal injury.

1. Mix petrol (gasoline) with oil. Fill fuel tank with fuel/oil mixture. See *Oil and Fuel Mixing Instructions*.
2. Put the ignition switch in the **ON (I)** position, Figure 16.
3. Fully press and release the primer bulb 5 to 7 times, slowly, until **FUEL IS VISIBLE IN THE PRIMER BULB**, Figure 17. If you can't see fuel in the bulb, press and release the bulb three (3) additional times, or as many times as it takes before you can see fuel in it.
4. Place the choke lever in the **FULL choke (A)** |←| position, Figure 17.
5. With the unit in the starting position, squeeze and hold the throttle control to the wide open (full throttle) position and pull the starter rope briskly 5 times in the **FULL choke (A)** |←| position, Figure 18. If the engine attempts to run before the fifth pull, proceed to step 6.

**NOTE:** *The engine will not run in the FULL choke (A) |←| position.*

6. Place the choke lever in the **PARTIAL choke (B)** |↘| position, Figure 17.
7. Pull starter rope briskly 1 to 3 times to start the engine, Figure 18.

**NOTE:** *Squeeze and hold the throttle control until the engine has started and warmed up.*

8. If the engine does not start, repeat steps 4 through 7.

**NOTE:** *If the engine floods while trying to start, place the choke lever in the RUN (C) |↑| position, Figure 6. Squeeze the throttle control. Pull the starter rope briskly. The engine should start within three (3) to eight (8) pulls.*

9. Squeeze the throttle control to warm up engine for 5 to 10 seconds. Place the choke lever in the **RUN (C)** |↑| position, Figure 17.

**NOTE:** *Choking is unnecessary when starting a warm engine. Put the ignition switch in the ON position (Figure 16), and start in PARTIAL choke (B) |↘| position (Figure 17).*

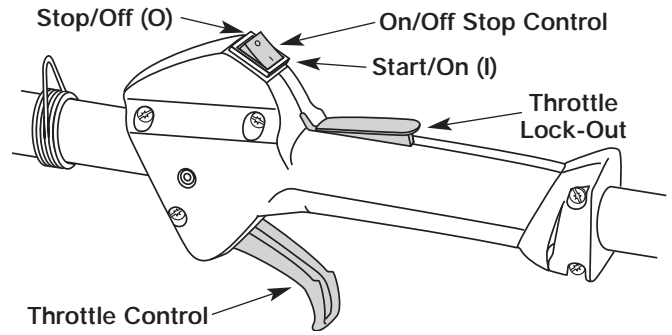


FIGURE 16

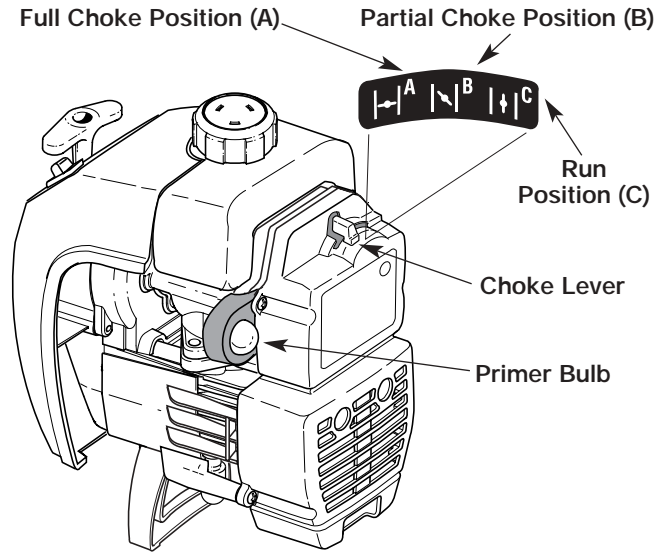


FIGURE 17

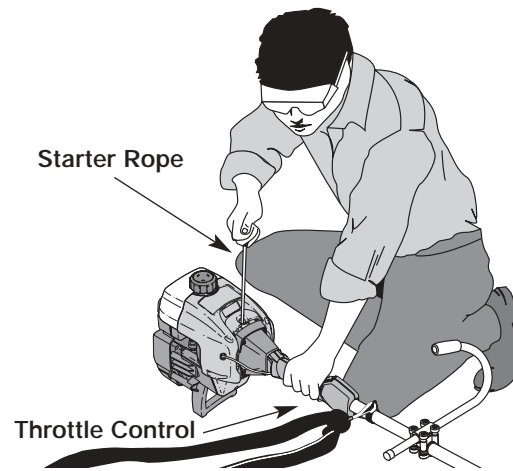


FIGURE 18

## STOPPING INSTRUCTIONS

1. Release your hand from the throttle control, Figure 18. Allow the engine to cool down by idling.
2. Put the ignition switch in the **OFF (O)** position, Figure 16.

## HOLDING THE TRIMMER



**WARNING:** Always wear eye, hearing, foot and body protection to reduce the risk of injury when operating this unit.

Before operating the unit, stand in the operating position, Figure 19. Check for the following:

- The operator is wearing eye protection and proper clothing
- With a slightly-bent right arm, the operator's hand is holding the shaft grip
- The operator's left arm is straight, his hand holding the J-handle
- The unit is at waist level
- The cutting attachment is parallel to the ground and easily contacts the grass without the need to bend over



FIGURE 19

## ADJUSTING TRIMMING LINE LENGTH

The Bump Head™ cutting head allows you to release trimming line without stopping the engine. To release more line, lightly tap the cutting head on the ground while operating the trimmer at high speed, Figure 20.

**NOTE:** Always keep the trimming line fully extended. Line release becomes more difficult as cutting line becomes shorter.

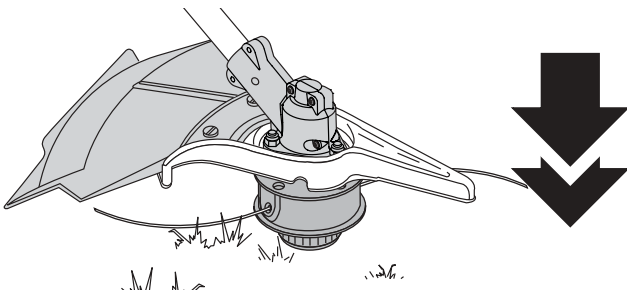


FIGURE 20

Each time the head is bumped, about 25.4 mm (1 inch) of trimming line releases. A blade in the cutting head guard will cut the line to the proper length if excess line is released.

For best results, tap the Bump Head™ on bare ground or hard soil. If line release is attempted in tall grass, the engine may stall. Always keep the trimming line fully extended. Line release becomes more difficult as the cutting line becomes shorter.

**NOTE:** Do not rest the Bump Head™ on the ground while the unit is running.



**CAUTION:** Do not remove or alter the line cutting blade assembly. Excessive line length will make the unit overheat. This may lead to serious personal injury or damage to the unit.

Some line breakage will occur from:

- Entanglement with foreign matter
- Normal line fatigue
- Attempting to cut thick, stalky weeds
- Forcing the line into objects such as walls or fence posts

## TIPS FOR BEST TRIMMING RESULTS

- Keep the cutting head parallel to the ground.
- Do not force the cutting head. Allow the tip of the line to do the cutting, especially along walls. Cutting with more than the tip will reduce cutting efficiency and may overload the engine.
- Cut grass over 200 mm (8 inches) by working from top to bottom in small increments to avoid premature line wear or engine drag.
- Cut from left to right whenever possible. Cutting to the right improves the unit's cutting efficiency. Clippings are thrown away from the operator.
- Slowly move the trimmer into and out of the cutting area at the desired height. Move either in a forward-backward or side-to-side motion. Cutting shorter lengths produces the best results.
- Trim only when grass and weeds are dry.
- The life of your cutting line is dependent upon:
  - Following the previous trimming techniques
  - What vegetation is being cut
  - Where it's being cut

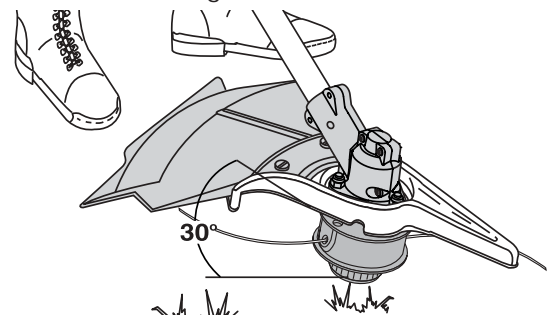


FIGURE 21

For example, the line will wear faster when trimming against a foundation wall as opposed to trimming around a tree.

## DECORATIVE TRIMMING

Decorative trimming is accomplished by removing all vegetation around trees, posts, fences, etc.

Rotate the whole unit so that the cutting head is at a 30° angle to the ground, Figure 10.

## USING THE CUTTING BLADE



**WARNING:** Always wear eye, hearing, foot, body protection and the strap to reduce the risk of injury when operating this unit.



**WARNING:** Do not use the cutting blade for edging or as an edger, severe personal injury to yourself or others can occur.

Before operating the unit with the cutting blade stand in the operating position, Figure 22. Refer to *Holding the Trimmer*.

### Cutting Blade Operating Tips:

To establish a rhythmic cutting procedure:

- Plant feet firmly, comfortably apart.
- Bring the engine to full throttle before entering the material to be cut. The blade has maximum cutting power at full throttle and is less likely to bind, stall, or cause blade thrust, which can result in serious personal injury to the operator or others.



FIGURE 22



**WARNING:** Kick back may occur when the spinning blade contacts an object that it does not immediately cut. Kick back can be violent enough to cause the unit and/or operator to be propelled in any direction, and possibly lose control of the unit. Kick back can occur without warning if the blade snags, stalls, or binds. This is more likely to occur in areas where it is difficult to see the material being cut.

- Cut while swinging the upper part of your body from right to left.
- Always release the throttle trigger and allow the engine to return to idle speed when not cutting.
- When done always unsnap unit from harness before taking harness off.



**WARNING:** The blade continues to spin after the engine is turned off. The coasting blade can seriously cut you if accidentally touched.

- Swing the unit in the same direction as the blade spins, which increases the cutting action.
- Move forward to the next area to be cut after the return swing and plant feet again.
- The cutting blade is designed with a second cutting edge, which can be used by removing the blade, turning it upside down, and reinstalling it.



**WARNING:** Do not sharpen the cutting blade. Sharpening the blade can cause the blade tip to break off while in use. This can result in severe personal injury to yourself or others. Replace the blade.

### To reduce the chance of material wrapping around the blade, follow these steps:

- Cut at full throttle.
- Swing the unit into material to be cut from your right to your left, Figure 23.
- Avoid the material just cut as you make the return swing.

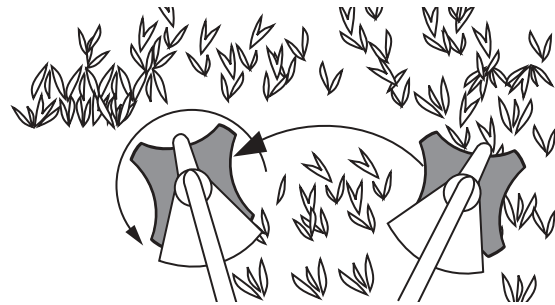


FIGURE 23



**WARNING:** Do not clear away cut material with the engine running or blade turning. To avoid serious personal injury, turn off engine. Allow the blade to stop before removing materials wrapped around the blade shaft.

## SECTION 5: MAINTAINING YOUR TRIMMER

**NOTE:** Some maintenance procedures may require special tools or skills. If you are unsure about these procedures take your unit to an authorized service dealer.

### MAINTENANCE SCHEDULE

These required maintenance procedures should be performed at the frequency stated in the table. They should also be included as part of any seasonal tune-up.



**WARNING:** To prevent serious injury, perform maintenance or repairs on a cool unit, never with the unit running. Disconnect spark plug wire to ensure the unit will not start.

FREQUENCY	MAINTENANCE REQUIRED	REFER TO
Before Starting Engine	Fill fuel tank with correct oil and fuel mixture	Page 11
Every 10 Hours	Clean and re-oil air filter	Page 17
Every 25 Hours	Check and clean spark arrestor Check spark plug condition and gap	Page 19 Page 18
Every 50 Hours	Inspect exhaust port and spark arrestor screen for clogging or obstruction to assure maximum performance levels	Page 19

### LINE INSTALLATION

This section covers both SplitLine™ and standard single line installation.

Always use genuine 0.095 in. (2.41 mm) replacement line. Line other than specified may make the engine overheat or fail.



**WARNING:** Never use metal-reinforced line, wire, chain, or rope. These can break off and become dangerous projectiles.

There are two methods to replace the trimming line:

- Wind the inner reel with new line
- Install a prewound inner reel

#### Winding the Existing Inner Reel

1. Hold the outer spool with one hand and unscrew the Bump Knob clockwise, Figure 24. Inspect the bolt inside the bump knob to make sure it moves freely. Replace the bump knob if damaged.
2. Remove the inner reel from the outer spool, Figure 24.

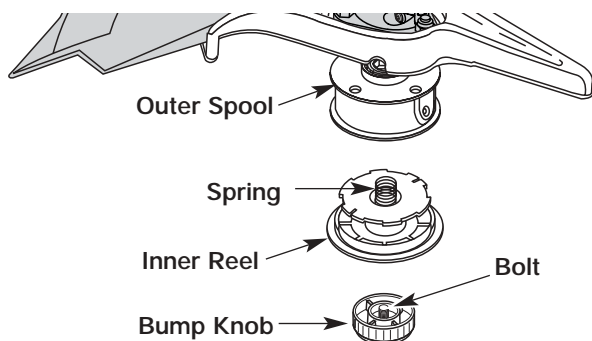


FIGURE 24

**NOTE:** Emission control device and system repair, maintenance or replacement may be performed by any non-road engine repair establishment, individual or authorized service dealer.

In order to assure peak performance of your engine, inspection of the engine exhaust port may be necessary after 50 hours of operation. If you notice lost RPM, poor performance or general lack of acceleration, this service may be required. If you feel your engine is need of this inspection, refer service to an authorized servicing dealer, or establishment for repair. **DO NOT** attempt to perform this process yourself as engine damage may result from contaminants involved in the cleaning process for the port.

3. Remove spring from the inner reel, Figure 24.
4. Use a clean cloth to wipe the the inner reel, spring, shaft and inner surface of the outer spool, Figure 25.
5. Check the indexing teeth on the inner reel and outer spool for wear, Figure 26. If necessary, remove burrs or replace the reel and spool.

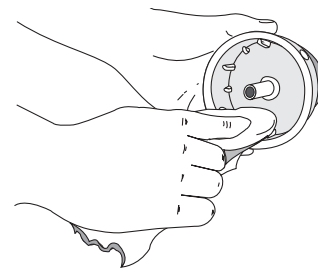


FIGURE 25

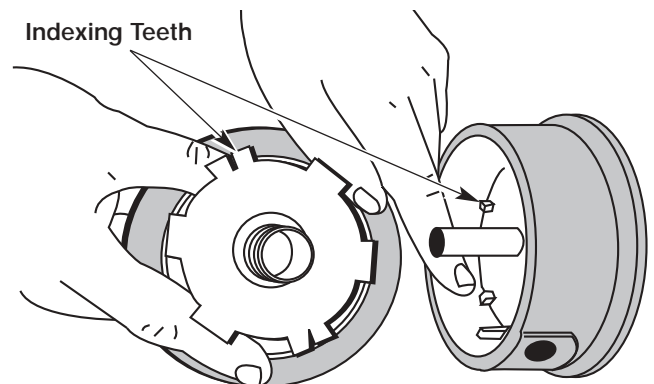


FIGURE 26

**NOTE:** *SplitLine™ can only be used with the inner reel containing the slotted holes. Single line can be used on either type of inner reel. Use Figure 27 to identify the inner reel you have.*

**NOTE:** *Always use the correct line length when installing trimming line on the unit. The line may not release properly if the line is too long.*

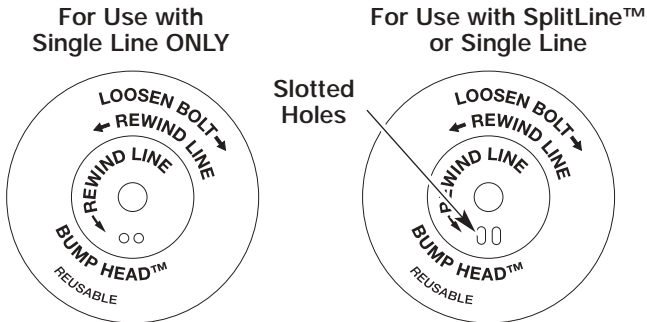


FIGURE 27

### Single Line Installation

#### Go To Step 8 for SplitLine™ Installation

6. Take approximately 30 feet (9.14 m) of new trimming line, loop it into two equal lengths. Insert each end of the line through one of the two holes in the inner reel, Figure 28. Pull the line through the inner reel so that the loop is as small as possible.

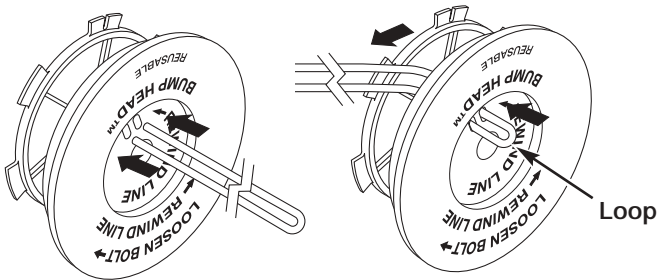


FIGURE 28

7. Wind the lines in tight even layers, onto the reel, Figure 29. Wind the line in the direction indicated on the inner reel. Place your index finger between the two lines to stop the lines from overlapping. Do not overlap the ends of the line. Proceed to step 11.

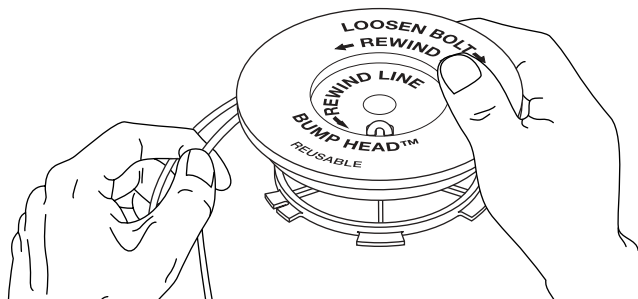


FIGURE 29

### SplitLine™ Installation

8. Take approximately 15 feet (4.57 m) of new trimming line. Insert one end of the line through one of the two holes in the inner reel, Figure 30. Pull the line through the inner reel until only about 4 inches are left out.

9. Insert the end of the line into the open hole in the inner reel and pull the line tight to make the loop as small as possible, Figure 30.
10. Before winding, split the line back about 6 inches.
11. Wind the line in tight even layers in the direction indicated on the inner reel.

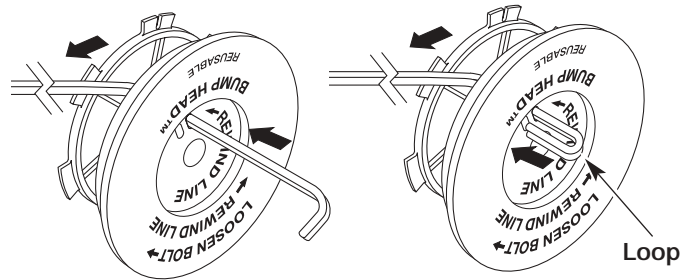


FIGURE 30

**NOTE:** *Failure to wind the line in the direction indicated will cause the cutting attachment to operate incorrectly.*

12. Insert the ends of the line into the two holding slots, Figure 31.
13. Insert the ends of the line through the eyelets in the outer spool and place inner reel with spring inside the outer spool, Figure 32. Push the inner reel and outer spool together. While holding the inner reel and outer spool, grasp the ends and pull firmly to release the line from the holding slots in the reel.

**NOTE:** *The spring must be assembled on the inner reel before reassembling the cutting attachment.*

14. Hold the inner reel in place and install the bump knob by turning counterclockwise. Tighten securely.

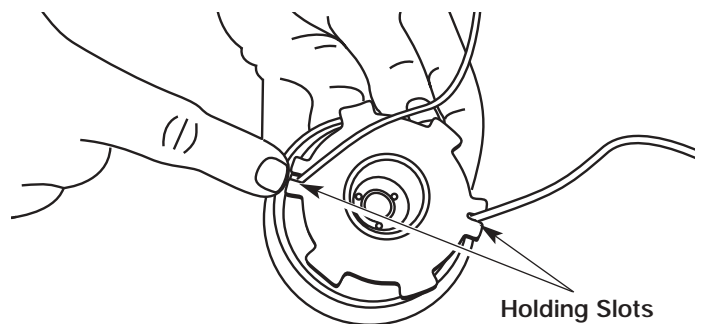


FIGURE 31

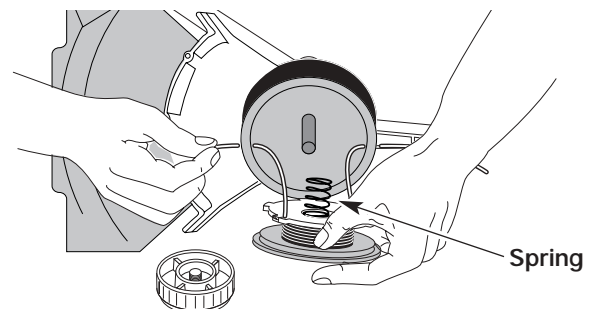


FIGURE 32



## INSTALLING A PREWOUND REEL

1. Hold the outer spool with one hand and unscrew the bump knob clockwise, Figure 15. Inspect the bolt inside the bump knob to make sure it moves freely. Replace the bump knob if damaged.
2. Remove the old inner reel from the outer spool, Figure 24.
3. Remove the spring from the old inner reel.
4. Place the spring in the new inner reel.

**NOTE:** The spring must be assembled on the inner reel before reassembling the cutting attachment.

5. Insert the ends of the line through the eyelets in the outer spool, Figure 32.
6. Place the new inner reel inside the outer spool. Push the inner reel and outer spool together. While holding the the reel and spool, grasp the ends and pull firmly to release the line from the holding slots in the spool.
7. Hold the inner reel in place and install the bump knob by turning counterclockwise. Tighten securely.

## AIR FILTER MAINTENANCE

### Removing the Air Filter/Muffler Cover



**WARNING:** To avoid serious personal injury, always turn the unit off and allow it to cool before you clean or perform any maintenance on it.

1. Place the choke lever in the PARTIAL choke position (B), Figure 33.

**NOTE:** The choke lever must be in the **PARTIAL choke position (B)** to remove the air filter/muffler cover, Figure 33.

2. Remove the four (4) screws securing the air filter/muffler cover, Figure 33. Use a flat blade or #T20 Torx bit screwdriver.
3. Pull the cover from the engine. Do not force.

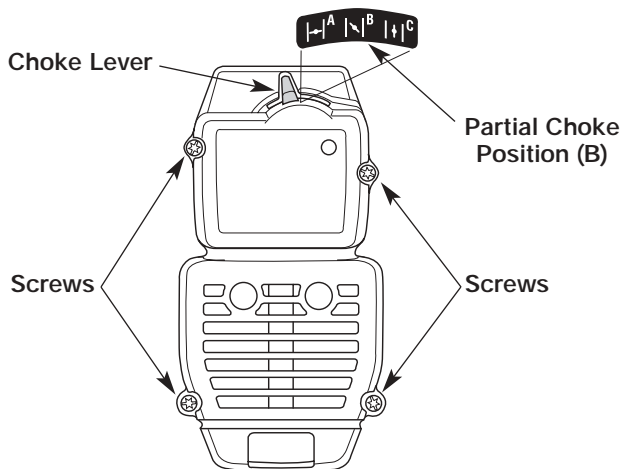


FIGURE 33

### Cleaning the Air Filter



**WARNING:** To avoid serious personal injury, always turn the unit off and allow it to cool before you clean or perform any maintenance on it.

Clean and re-oil the air filter every 10 hours of operation. It is an important item to maintain. Failure to maintain the air filter will **VOID** the warranty.

1. Remove air filter/muffler cover. See *Removing the Air Filter/Muffler Cover*.
2. Remove the air filter from behind the air filter/muffler cover, Figure 34.
3. Wash the filter in detergent and water, Figure 35. Rinse the filter thoroughly. Squeeze out excess water. Allow it to dry completely.
4. Apply enough clean SAE 30 oil to lightly coat the filter, Figure 36.
5. Squeeze the filter to spread and remove excess oil, Figure 37.

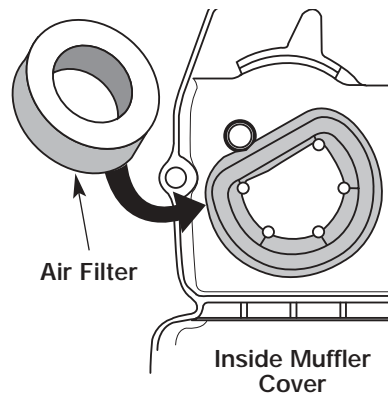


FIGURE 34

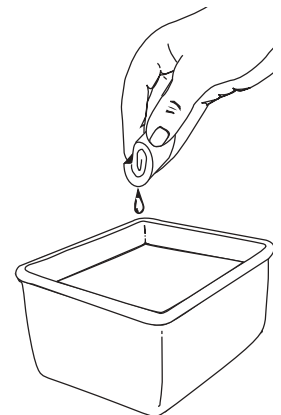


FIGURE 35

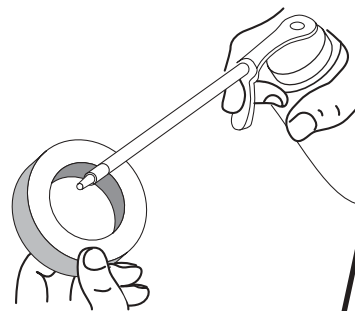


FIGURE 36

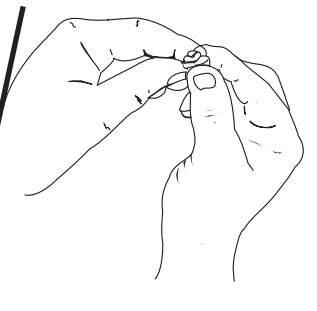


FIGURE 37

6. Replace the air filter in the air filter/muffler cover, Figure 34.

**NOTE:** Operating the unit without the air filter and air filter/muffler cover assembly, will **VOID** the warranty.

### Reinstalling the Air filter/Muffler Cover

1. Place the air filter/muffler cover over the back of the carburetor and muffler.

**NOTE:** The choke lever must be in the **PARTIAL choke position (B)** to install the air filter/muffler cover, Figure 21.

2. Insert the four (4) screws into the holes in the air filter/muffler cover and tighten, Figure 33. Use a flat blade or #T20 Torx bit screwdriver. Do not over-tighten. Do not force.

## CARBURETOR ADJUSTMENT

The idle speed of the engine is adjustable through the air filter/muffler cover, Figure 38.

**NOTE:** Careless adjustments can seriously damage your unit. An authorized service dealer should make carburetor adjustments.

### Check Fuel Mixture

Old and/or improperly mixed fuel is usually the reason for the unit not running properly. Drain and refill the tank with fresh, properly mixed fuel prior to making any adjustments. Refer to *Oil and Fuel Information*.

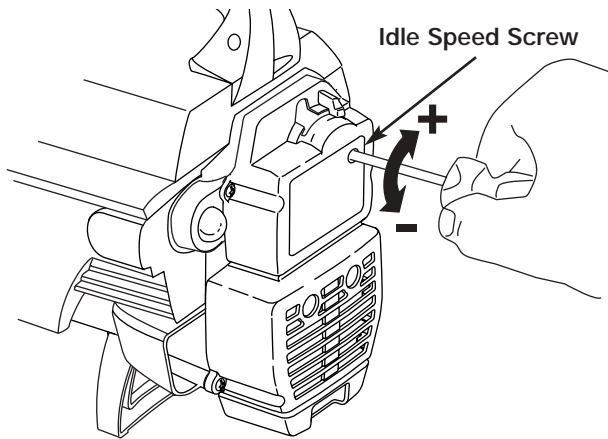


FIGURE 38

### Clean Air Filter

The condition of the air filter is important to the operation of the unit. A dirty air filter will restrict air flow and change the air/fuel mixture. This is often mistaken for an out-of-adjustment carburetor. Check the condition of the air filter before adjusting the idle speed screw. Refer to *Air Filter Maintenance*.

### Adjusting the Idle Speed



**WARNING:** The cutting head will spin during idle speed adjustments. Wear protective clothing and observe all safety instructions to prevent serious personal injury.

If after checking the fuel mixture and cleaning the air filter the engine still will not idle, adjust the idle speed as follows.

1. Start the engine and let it run at a high idle for a minute to warm up. See *Starting/Stopping Instructions*.
2. Release the throttle trigger and let the engine idle. If the engine stops, insert a small phillips or flat blade screwdriver into the hole in the air filter/muffler cover, Figure 38. Turn the idle speed screw in, **clockwise**, 1/8 of a turn at a time (as needed) until the engine idles smoothly.
3. If the engine appears to be idling too fast, turn the idle speed screw out, **counterclockwise**, 1/8 of a turn at a time (as needed) to reduce idle speed.

**NOTE:** If a tachometer is available, set idle speed to RPM specifications in *Specifications* section.

Checking the fuel mixture, cleaning the air filter, and adjusting the idle speed should solve most engine problems.

If not and:

- The engine will not idle
- The engine hesitates or stalls on acceleration
- There is a loss of engine power

Have the carburetor adjusted by an authorized service dealer.



**WARNING:** When the unit is turned off make sure the cutting head has stopped before the unit is set down to prevent serious personal injury.

### REPLACING THE SPARK PLUG

Use a Champion RDJ7Y spark plug (or equivalent). The correct air gap is **0.5 mm (0.020 in.)**. Remove the plug after every 25 hours of operation and check its condition.

1. Stop the engine and allow it to cool. Grasp the plug wire firmly and pull the cap from the spark plug.
2. Clean dirt from around the spark plug. Remove the spark plug from the cylinder head by turning a 5/8 in. socket counterclockwise.

**NOTE:** Replace cracked, fouled or dirty spark plug.

3. Set the air gap at **0.5 mm (0.020 in.)** using a feeler gauge, Figure 39.

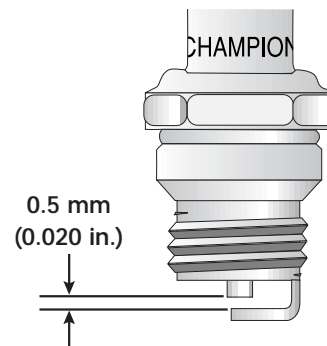


FIGURE 39



**CAUTION:** Do not sand blast, scrape, or clean electrodes. Grit in the engine could damage the cylinder.

4. Install a correctly gapped spark plug in the cylinder head. Tighten by turning the 5/8 in. socket clockwise until snug.

If using a torque wrench torque to:

**12.3-13.5 N•m (110-120 in.•lb.)**

**Do not over tighten.**

## SPARK ARRESTOR MAINTENANCE

1. Remove air filter/muffler cover. Refer to *Removing the Air Filter/Muffler Cover*.
2. Locate muffler front and the two (2) bolts securing it to the engine, Figure 40. Remove the two (2) bolts using a flatblade screwdriver or 5/16-inch socket or nut driver. Pull muffler off of the engine.
3. Turn muffler over to the back side and locate the exhaust gasket. Remove the muffler exhaust gasket from the muffler, Figure 40.

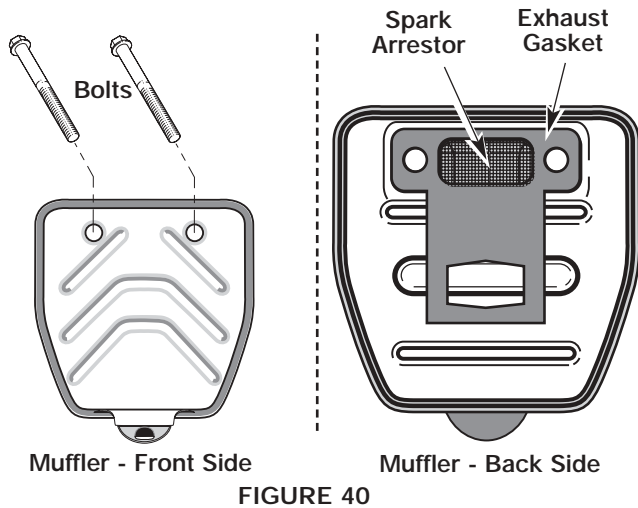


FIGURE 40

**NOTE:** If exhaust gasket is torn or damaged, replace with a new gasket before reassembling muffler.

4. Using a small flatblade screwdriver, carefully pry up the spark arrestor from the recessed hole, Figure 41. Remove the spark arrestor from the muffler.
5. Clean the spark arrestor with a wire brush. Replace if it is damaged or unable to thoroughly clean, Figure 41.
6. Reinstall the spark arrestor by pressing it into the recessed hole on muffler's back side. Make sure it fits tightly against the muffler and does not protrude.

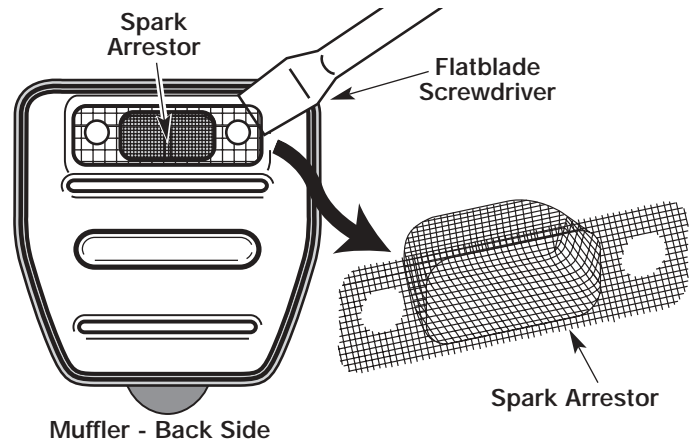


FIGURE 41

7. Place the exhaust gasket against the muffler's back side. Align exhaust gasket bolt holes with the bolt holes in muffler. While holding the exhaust gasket in place, insert bolts into muffler's front side, Figure 40.
8. Place muffler (with exhaust gasket in place and bolts inserted), against the engine, aligning the bolt holes. Tighten the bolts to secure muffler to the engine. If using a torque wrench torque to:

**80-90 in.·lb. (9-10.2 N·m)**



**WARNING:** If muffler is not tightened securely, it could fall off and cause damage to the unit and possibly inflict serious personal injury.

9. Reinstall the air filter/muffler cover.

---

## SECTION 6: OFF SEASON STORAGE

### CLEANING THE UNIT



**WARNING:** To avoid serious personal injury, always turn the unit off and allow it to cool before you clean or perform any maintenance on it.

- Use a small brush to clean off the outside of the unit and to keep the air vents free of obstructions.
- Do not use strong detergents or petroleum based cleaners, such as kerosene. Some household cleaners contain aromatic oils such as pine and lemon that can damage the plastic housings or handles. Wipe off any moisture with a soft cloth.

### STORAGE

- Store the unit indoors, away from moisture and harmful substances such as fertilizers and solvents.
- Never store the unit with petrol (gasoline) in the tank where fumes may reach an open flame or spark.
- Allow the engine to cool before storing.
- Store the unit in a locked up area to prevent unauthorized use or damage.
- Store the unit in a dry, well ventilated area.
- Store the unit out of the reach of children.

### LONG TERM STORAGE

If the unit will be stored for an extended time,

1. Drain all fuel from the fuel tank into a container. Do not use fuel that has been stored for more than 60 days. Dispose of the old fuel in accordance to local regulations.
2. Start the engine and allow it to run until it stalls. This ensures that all fuel has been drained from the carburetor.
3. Allow the engine to cool. Remove the spark plug and put 30 ml. (1 oz.) of high quality motor oil into the cylinder. Pull the starter rope slowly to distribute the oil. Reinstall the spark plug.

**NOTE:** *Remove the spark plug and drain all of the oil from the cylinder before attempting to start the trimmer after storage.*

4. Thoroughly clean the unit and inspect for any loose or damaged parts. Repair or replace damaged parts and tighten loose screws, nuts or bolts. The unit is ready for storage.

### TRANSPORTING

- Allow the engine to cool before transporting.
- Secure the unit while transporting.
- Drain the fuel tank before transporting.
- Tighten fuel cap before transporting.

---

## SECTION 7: TROUBLE SHOOTING GUIDE

### ENGINE WILL NOT START

CAUSE	ACTION
Empty fuel tank . . . . .	Fill fuel tank with properly mixed fuel
Primer bulb wasn't pressed enough . . . . .	Press primer bulb fully and slowly 5-7 times
Engine flooded . . . . .	Use starting procedure with choke lever in the RUN position. See page 12.
Old or improperly mixed fuel . . . . .	Drain gas tank / Add fresh fuel mixture
Fouled spark plug . . . . .	Replace or clean the spark plug

### ENGINE WILL NOT IDLE

CAUSE	ACTION
Air Filter is plugged . . . . .	Replace or clean the air filter
Old or improperly mixed fuel . . . . .	Drain gas tank / Add fresh fuel mixture
Improper carburetor adjustment . . . . .	Adjust per instruction on page 18

### ENGINE WILL NOT ACCELERATE

CAUSE	ACTION
Old or improperly mixed fuel . . . . .	Drain gas tank / Add fresh fuel mixture
Improper carburetor adjustment . . . . .	Take to an authorized service dealer for carburetor adjustment

### ENGINE LACKS POWER OR STALLS WHEN UNDER LOAD

CAUSE	ACTION
Old or improperly mixed fuel . . . . .	Drain gas tank / Add fresh fuel mixture
Improper carburetor adjustment . . . . .	Take to an authorized service dealer for carburetor adjustment

### CUTTING HEAD WILL NOT ADVANCE LINE

CAUSE	ACTION
Cutting head bound with grass . . . . .	Stop the engine and clean cutting head
Cutting head out of line . . . . .	Refill with new line
Inner reel bound up . . . . .	Replace the inner reel
Cutting head dirty . . . . .	Clean inner reel and outer spool
Line welded . . . . .	Disassemble, remove the welded section and rewind the line
Line twisted when refilled . . . . .	Disassemble and rewind the line
Not enough line is exposed . . . . .	Push the bump knob and pull out line until 102 mm (4 inches) of line is outside of the cutting head

**If further assistance is required, contact your authorized service dealer.**

## SECTION 8: SPECIFICATIONS

### ENGINE

Engine Type	Air-Cooled, 2-Cycle
Stroke	31.75 mm (1.25 in.)
Displacement	31 cc (1.9 cu in.)
Clutch Type	Centrifugal
Idle Speed RPM	2,800-3,600 rpm
Operating RPM	6,100-7,300 rpm
Operating RPM	6,100-9,800 rpm
Ignition Type	Electronic
Ignition Switch	Rocker Switch
Spark Plug Gap	0.5 mm (0.020 in.)
Lubrication	Fuel/Oil Mixture
Fuel/Oil Ratio	32:1
Carburetor	Diaphragm, All-Position
Starter	Auto Rewind
Muffler	Baffled with Guard
Throttle	Manual Spring Return
Fuel Tank Capacity	444 ml (15 oz)

### DRIVE SHAFT and CUTTING HEAD

Drive Shaft Housing	Steel
Throttle Control	Finger-Tip Trigger w/Lock-Out
Unit Weight (No fuel, with cutting head, cutting head guard and D-handle)	6.69 kg (14.75 lbs.)
Cutting Mechanism	4-Tooth Cutting Blade, Dual String Cutting Head
Line Spool	Bump Line Releaser
Line Spool Diameter	101.6 mm (4 inches)
Trimming Line Diameter	2.41 mm (0.095 inches)
Cutting Path Diameter	45.7 cm (18 inches)
Cutting Path Diameter, Cutting Blade	204 mm (8 inches)
Shoulder Harness	Single Quick-Snap

Maximum Vibration Level (Idle)*	8.85 m/s <sup>2</sup>
Maximum Vibration Level (Racing)*	9.77 m/s <sup>2</sup>
Maximum Sound Power Level (Idle) ‡	83.3 LweqdB(A)
Maximum Sound Power Level (Racing) ‡	97.3 LweqdB(A)

\* Method for obtaining level per ISO 7916

‡ Method for obtaining level per ISO 7917

## SECTION 9: NOTES

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## SECTION 9: NOTES Cont...



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